

## ABSTRACT

A balance system and method for balancing piston forces within a single cylinder internal combustion engine are disclosed. The balance system includes a crankshaft, a counterbalance assembly and a groove. The crankshaft includes a crankshaft portion, a crank arm, a crank pin, and an eccentric flange adjacent to the crank arm. The counterbalance assembly has a counterbalancing mass portion and a coupling arm that are fixed with respect to one another, and a pin that protrudes from a side of the counterbalancing mass portion. The coupling arm is supported by the eccentric flange. The groove is capable of receiving the pin, where the pin is capable of sliding along the groove and also rotating within the groove, so that the counterbalance assembly is capable of rotating while moving toward and away from the crankshaft.